New England Common Assessment Program

Released Items
2009
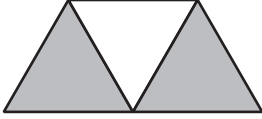
Grade 3
Mathematics

Mathematics

1 Look at this figure.

What fraction of the figure is shaded gray?

○ A. $\frac{1}{2}$

○ B. $\frac{2}{3}$

○ C. $\frac{2}{1}$

○ D. $\frac{3}{2}$

2 Which is another way to write 135?

○ A. 1 ten + 35 ones

○ B. 1 hundred + 35 tens

○ C. 13 tens + 5 ones

○ D. 13 hundreds + 5 ones

3 Mrs. Linz gives piano lessons to 13 students. She gives drum lessons to 3 students. Which sentence is true?

○ A. Mrs. Linz gives 1 more piano lesson than she gives drum lessons.

○ B. Mrs. Linz gives 1 fewer piano lesson than she gives drum lessons.

○ C. Mrs. Linz gives 10 more piano lessons than she gives drum lessons.

○ D. Mrs. Linz gives 10 fewer piano lessons than she gives drum lessons.

4 Katrina has already done 18 sit-ups. She needs to do 30 sit-ups altogether.

How many more sit-ups does Katrina need to do?

○ A. 12
○ B. 18
○ C. 22
○ D. 48

5 Cindy had $1.00. Then she bought a pencil for $0.37. How much money does she have now?
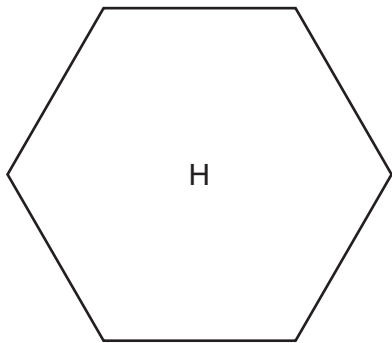
○ A.

○ B.

○ C.
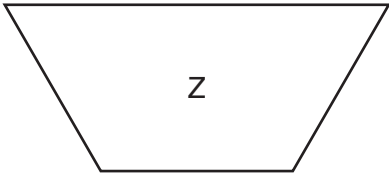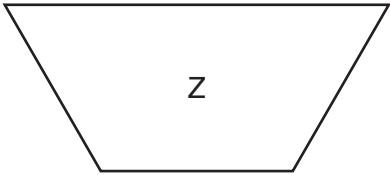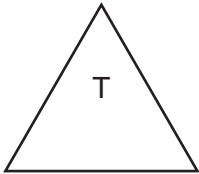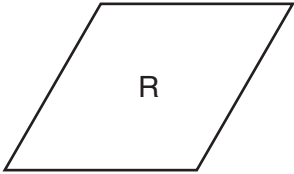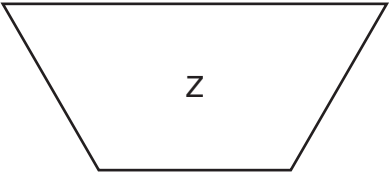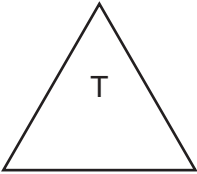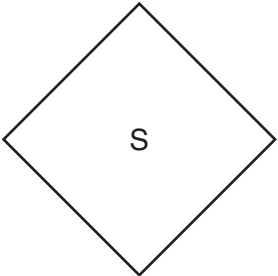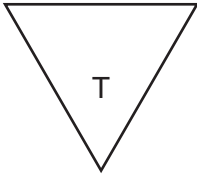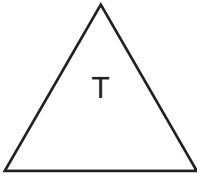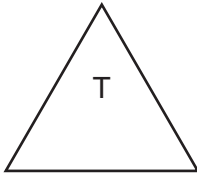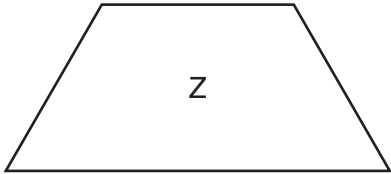

○ D.

6 Bobby used three shapes to make the hexagon below.

H

Which three shapes did Bobby use?

○ A.   Z   Z   T

○ B.   R   Z   T

○ C.   S   T   Z

○ D.   T   T   Z

4

7 Which clock shows 15 minutes after 7 o'clock?

○ A.

○ B.
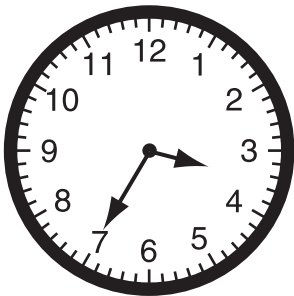
○ C.
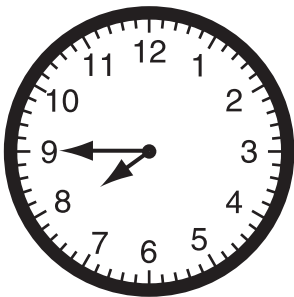
○ D.
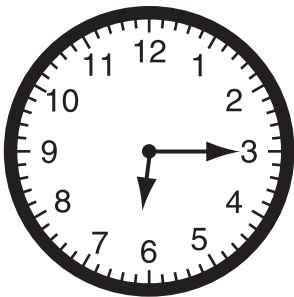
8 Look at this thermometer.
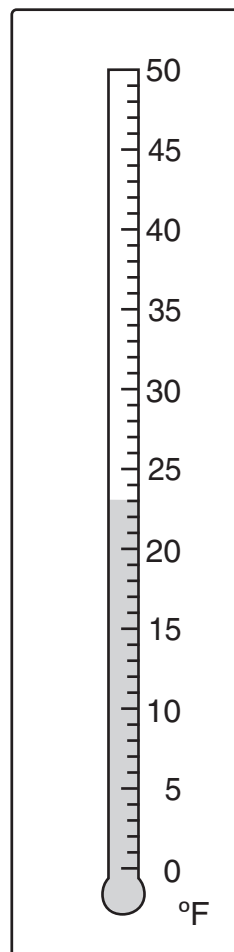
What temperature does this thermometer show?

○ A. 21°F

○ B. 22°F

○ C. 23°F

○ D. 24°F

9 Look at this number sentence.

$$11 - \boxed{?} = 8 - 2$$

What number makes this number sentence true?

○ A. 1
○ B. 3
○ C. 5
○ D. 6

10 The tally chart below shows the number of cups of juice served at a class party.

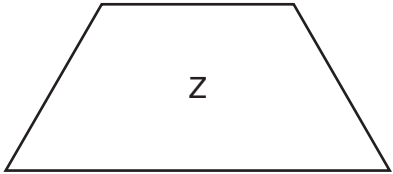**Cups of Juice**

Apple	|||
Grape	⫫
Orange	⫫ ||
Cranberry	||

How many cups of juice were served?

○ A. 4
○ B. 7
○ C. 15
○ D. 17

11 Mrs. Thompson has some puzzles. She gave 38 puzzles to her students. Now she has 16 puzzles left. How many puzzles did Mrs. Thompson start with?

12 This table shows the number of children at story time.

Story Time

Month	Number of Children
January	25
February	29
March	33
April	37
May	?

The pattern in the table continues.

How many children will go to story time in May?

⑬ Look at this number sentence.

$$
\begin{array}{r}
27 \\
-\ \boxed{} \\
\hline
11
\end{array}
$$

What number makes this number sentence true?

14 Look at the group of children.
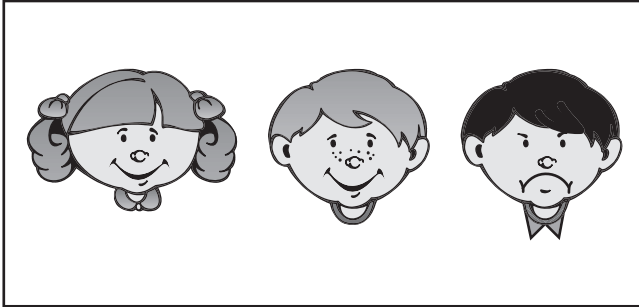
a. Write a fraction that shows the part of the group that is smiling.

b. How did you get the top number in your fraction?

c. How did you get the bottom number in your fraction?

15 Lamar had $1.00 for a snack. He spent $0.65 on an apple.

a. How much money does Lamar have now? Use a dollar sign ($) and a decimal point (.) to write your answer.

b. Show or name a set of coins Lamar could have now.

16 Look at this line plot.

Books We Read in May

```
                          ×
                          ×         ×
                          ×         ×
            ×        ×    ×         ×
       ×    ×    ×   ×    ×         ×
   ──┼────┼────┼────┼────┼────┼────┼──
     1    2    3    4    5    6    7
```
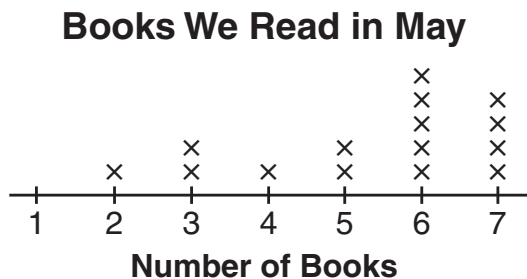
Number of Books

Key
× represents 1 student

Stella wrote this statement using the data in the line plot.

Three students read two books in May.

a. Did Stella write a correct statement? Explain why or why not.

b. Write your own statement using the data in this line plot.

New England Common Assessment Program
Mathematics Tool Kit – Grade 3

Use the shapes to answer questions on the mathematics test.
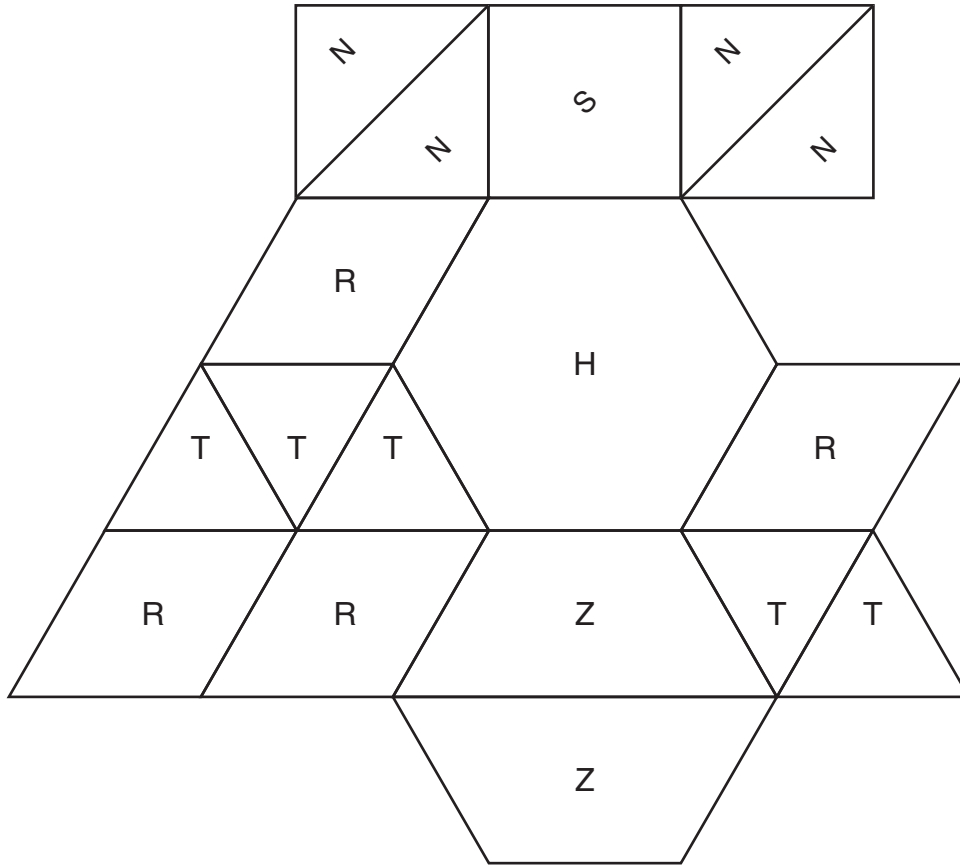
square-inch tile	square-inch tile	square-inch tile	square-inch tile	square-inch tile
square-inch tile	square-inch tile	square-inch tile	square-inch tile	square-inch tile

NEW ENGLAND COMMON ASSESSMENT PROGRAM

Released Items
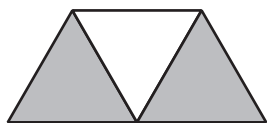## Support Materials
2009

Grade 3
Mathematics

N&O 2.1 **Demonstrates conceptual understanding of rational numbers with respect to: whole numbers**
from <u>0 to 199</u> using place value, by applying the concepts of equivalency in composing or
decomposing numbers (e.g., 34 = 17 + 17; 34 = 29 + 5); and in expanded notation
(e.g., 141 = 1 hundred + 4 tens + 1 one or 141 = 100 + 40 + 1) **using models, explanations, or other**
representations; and **positive fractional numbers** (benchmark fractions: *a*/2, *a*/3, or *a*/4, where *a* is a
whole number greater than 0 and less than or equal to the denominator) as a part to whole relationship
in area and set models where the denominator is equal to the number of parts in the whole **using**
models, explanations, or other representations.

---

1 Look at this figure.

What fraction of the figure is
shaded gray?

○ A. $\frac{1}{2}$

○ B. $\frac{2}{3}$

○ C. $\frac{2}{1}$

○ D. $\frac{3}{2}$

N&O 2.1 **Demonstrates conceptual understanding of rational numbers with respect to: whole numbers**
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(e.g., 141 = 1 hundred + 4 tens + 1 one or 141 = 100 + 40 + 1) **using models, explanations, or other**
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whole number greater than 0 and less than or equal to the denominator) as a part to whole relationship
in area and set models where the denominator is equal to the number of parts in the whole **using**
models, explanations, or other representations.

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2 Which is another way to write 135?

- ○ A. 1 ten + 35 ones
- ○ B. 1 hundred + 35 tens
- ○ C. 13 tens + 5 ones
- ○ D. 13 hundreds + 5 ones

> **N&O 2.2** **Demonstrates understanding of the relative magnitude of numbers** from <u>0 to 199</u> by ordering whole numbers; by comparing whole numbers to each other or to benchmark whole numbers (10, 25, 50, 75, 100, <u>125</u>, <u>150</u>, or <u>175</u>); by demonstrating an understanding of the relation of inequality when comparing whole numbers by using "1 more", "1 less", "10 more", "10 less", "<u>100 more</u>", or "<u>100 less</u>"; or by connecting number words and numerals to the quantities they represent using models, number lines, or explanations.

3 Mrs. Linz gives piano lessons to 13 students. She gives drum lessons to 3 students. Which sentence is true?

- ○ A. Mrs. Linz gives 1 more piano lesson than she gives drum lessons.
- ○ B. Mrs. Linz gives 1 fewer piano lesson than she gives drum lessons.
- ○ C. Mrs. Linz gives 10 more piano lessons than she gives drum lessons.
- ○ D. Mrs. Linz gives 10 fewer piano lessons than she gives drum lessons.

> **N&O 2.3** **Demonstrates conceptual understanding of mathematical operations involving** addition and
> subtraction of whole numbers by solving problems involving joining actions, separating actions,
> part-part whole relationships, and comparison situations; and addition of multiple one-digit whole
> numbers.

4 Katrina has already done 18 sit-ups. She
needs to do 30 sit-ups altogether.

How many more sit-ups does Katrina
need to do?

○ A. 12
○ B. 18
○ C. 22
○ D. 48

N&O 2.5   **Demonstrates understanding of monetary value** <u>by adding coins together to a value no greater than $1.99 and representing the result in dollar notation</u>; <u>making change from $1.00 or less</u>, or <u>recognizing equivalent coin representations of the same value (values up to $1.99).</u>

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5 Cindy had $1.00. Then she bought a pencil for $0.37. How much money does she have now?
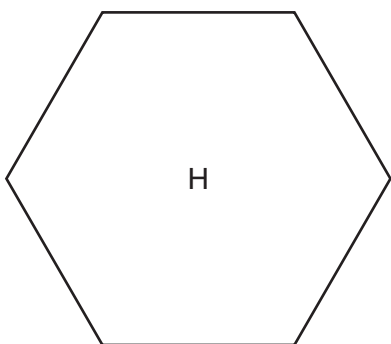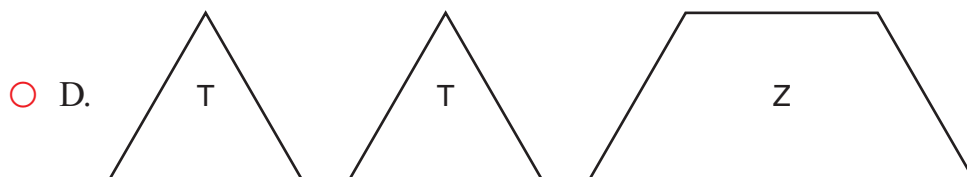
○ A.

○ B.

○ C.

○ D.
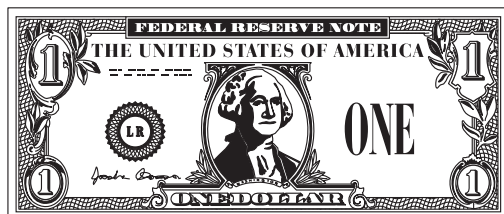
G&M 2.1 **Uses properties, attributes, composition, or decomposition to sort or classify** polygons or objects by a combination of two or more non-measurable or measurable attributes.

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6 Bobby used three shapes to make the hexagon below.
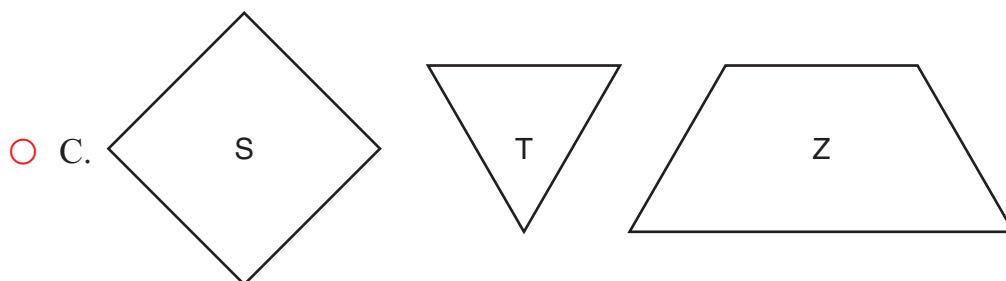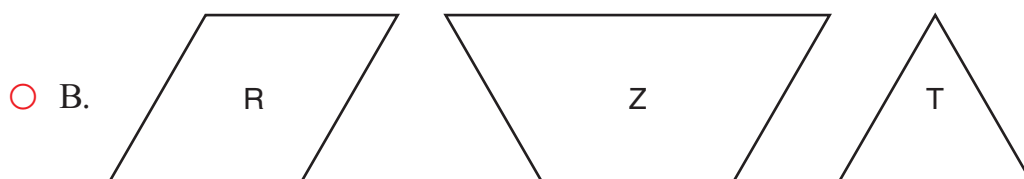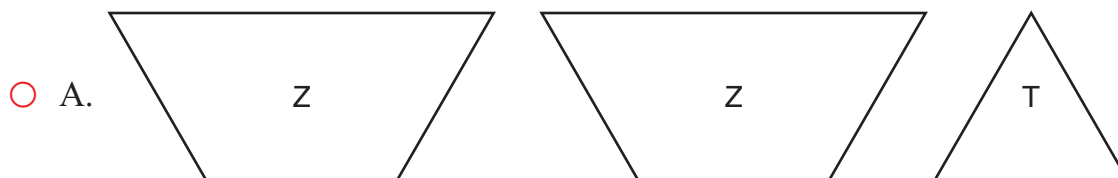
H

Which three shapes did Bobby use?

A. Z   Z   T

B. R   Z   T

C. S   T   Z

D. T   T   Z

G&M 2.7 **Measures and uses units of measures appropriately and consistently, and makes conversions within systems when solving problems** across the content strands.
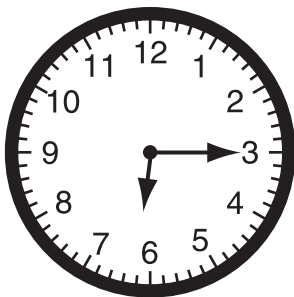
7 Which clock shows 15 minutes after 7 o'clock?
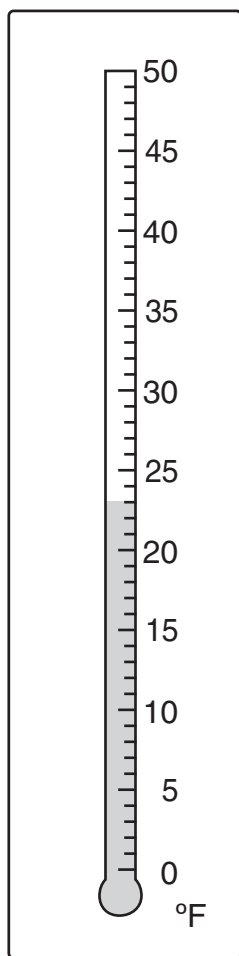
○ A.

○ B.

○ C.

○ D.

G&M 2.7 **Measures and uses units of measures appropriately and consistently, and makes conversions within systems when solving problems** across the content strands.

---

8 Look at this thermometer.

What temperature does this thermometer show?

- A. 21°F
- B. 22°F
- C. 23°F
- D. 24°F

F&A 2.4 **Demonstrates conceptual understanding of equality** by finding the value that will make an open sentence true (e.g., 2 + ☐ = 7). (limited to one operation and limited to use addition or subtraction)

---

9 Look at this number sentence.

$$11 - \boxed{?} = 8 - 2$$

What number makes this number sentence true?

○ A. 1

○ B. 3

○ C. 5

○ D. 6

DSP 2.1 Interprets a given representation **(pictographs with one-to-one correspondence, <u>line</u> <u>plots</u>, tally charts, or tables) to answer questions related to the data, or to analyze the data to formulate conclusions. (IMPORTANT:** *Analyzes data consistent with concepts and skills in M(DSP)–2–2.***)**

---

10 The tally chart below shows the number of cups of juice served at a class party.

Cups of Juice

Apple				
Grape	ЖН
Orange	ЖН		
Cranberry			

How many cups of juice were served?

○ A. 4

○ B. 7

○ C. 15

○ D. 17

N&O 2.3 **Demonstrates conceptual understanding of mathematical operations involving** addition and subtraction of whole numbers by solving problems involving joining actions, separating actions, part-part whole relationships, and comparison situations; and addition of multiple one-digit whole numbers.

11 Mrs. Thompson has some puzzles. She gave 38 puzzles to her students. Now she has 16 puzzles left. How many puzzles did Mrs. Thompson start with?

Scoring Guide

Score	Description
1	for correct answer, **54**
0	Response is incorrect or contains some correct work that is irrelevant to the skill or concept being measured.
Blank	No response

SCORE POINT 1
(EXAMPLE A)

⑪ Mrs. Thompson has some puzzles. She gave 38 puzzles to her students. Now she has 16 puzzles left. How many puzzles did Mrs. Thompson start with?

$$54 - 38 = 16 \text{ puzzles}$$

The student's response is correct.

SCORE POINT 1
(EXAMPLE B)

⑪ Mrs. Thompson has some puzzles. She gave 38 puzzles to her students. Now she has 16 puzzles left. How many puzzles did Mrs. Thompson start with?
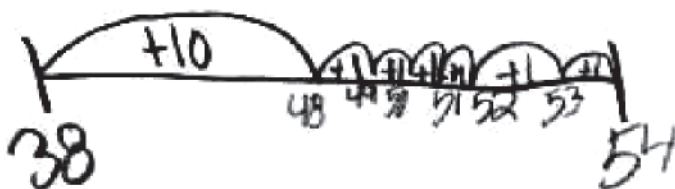
The student's response is correct. (Showing strategy is not required.)

SCORE POINT 0
(EXAMPLE A)

⑪ Mrs. Thompson has some puzzles. She gave 38 puzzles to her students. Now she has 16 puzzles left. How many puzzles did Mrs. Thompson start with?

$$\begin{array}{r} 38 \\ +16 \\ \hline 44 \end{array}$$

The student's response is incorrect.

F&A 2.1	**Identifies and extends to specific cases a variety of patterns** (linear and non-numeric) represented in models, tables, or sequences by extending the pattern to the next element, or finding a missing element (e.g., 2, 4, 6, ___, 10).

12 This table shows the number of children at story time.

Story Time

Month	Number of Children
January	25
February	29
March	33
April	37
May	?

The pattern in the table continues.

How many children will go to story time in May?

Scoring Guide

Score	Description
1	for correct answer, **41**
0	Response is incorrect or contains some correct work that is irrelevant to the skill or concept being measured.
Blank	No response

⑫ This table shows the number of children at story time.

Story Time

Month	Number of Children
January	25
February	29
March	33
April	37
May	?

The pattern in the table continues.

How many children will go to story time in May?

41

The student's response is correct.

⓬ This table shows the number of children at story time.

Story Time

Month	Number of Children
January	25
February	29
March	33
April	37
May	?

The pattern in the table continues.

How many children will go to story time in May?

The student's response is incorrect. (Correct strategy is not sufficient for credit.)

31 because the pattern is plus 4 every month

⑫ This table shows the number of children at story time.

Story Time

Month	Number of Children
January	25
February	29
March	33
April	37
May	?

The pattern in the table continues.

How many children will go to story time in May?   39

The student's response is incorrect.

F&A 2.4   **Demonstrates conceptual understanding of equality** by finding the value that will make an open sentence true (e.g., 2 + ☐ = 7). (limited to one operation and limited to use addition or subtraction)

⓭ Look at this number sentence.

$$
\begin{array}{r}
27 \\
- \boxed{} \\
\hline
11
\end{array}
$$

What number makes this number sentence true?

Scoring Guide

Score	Description
1	for correct answer, **16**
0	Response is incorrect or contains some correct work that is irrelevant to the skill or concept being measured.
Blank	No response

⓭ Look at this number sentence.

$$27$$

$$- \boxed{}$$

$$\overline{}$$

$$11$$

What number makes this number sentence true?

$$27 - 16 = 11$$ ———— The student's response is correct.

SCORE POINT 1
(EXAMPLE B)

⓭ Look at this number sentence.

$$27$$

$$- \boxed{16}$$

$$\overline{}$$

$$11$$

The student's response is correct.
(Showing work is not required.)

What number makes this number sentence true?

1 2 3 4 5 6 7 8 9 10 11 12 13
14 15 16 17 18 19 20 21 22 23
24 25 26 27   16

⓭ Look at this number sentence.

$$27$$

$$-\boxed{12}$$

$$\overline{}$$

$$11$$

What number makes this number sentence true?

16

The student's response contains conflicting information.

⓭ Look at this number sentence.

27

$$27 - \boxed{}$$

11

$$\begin{array}{r} 27 \\ -\ 11 \\ \hline 38 \end{array}$$

The student's response is incorrect.

What number makes this number sentence true?

In the middle it's 38. Thats what makes the number sentence true.

> **N&O 2.1** **Demonstrates conceptual understanding of rational numbers with respect to: whole numbers**
> from <u>0 to 199</u> using place value, by applying the concepts of equivalency in composing or
> decomposing numbers (e.g., 34 = 17 + 17; 34 = 29 + 5); and in expanded notation
> (e.g., 141 = 1 hundred + 4 tens + 1 one or 141 = 100 + 40 + 1) **using models, explanations, or other**
> **representations**; and **positive fractional numbers** (benchmark fractions: $a/2$, $a/3$, or $a/4$, where a is a
> whole number greater than 0 and less than or equal to the denominator) as a part to whole relationship
> in area and set models where the denominator is equal to the number of parts in the whole **using**
> **models, explanations, or other representations**.

14 Look at the group of children.

a. Write a fraction that shows the part of the group that is smiling.

b. How did you get the top number in your fraction?

c. How did you get the bottom number in your fraction?

Scoring Guide

Score	Description
2	for a correct fraction with sufficient explanation given
1	for a correct fraction OR for a sufficient explanation for the numerator OR for a sufficient explanation for the denominator OR for showing some understanding of parts (smiling) **to** the whole (children)
0	Response is incorrect or irrelevant.
Blank	No response

Sample Responses:

Part a: $\dfrac{2}{3}$

Part b: Student explains that the 2 represents the two smiling faces.

Part c: Student explains that the 3 represents the total number of faces.

Note: Students do not need to use the terms "numerator" and "denominator."

14 Look at the group of children.
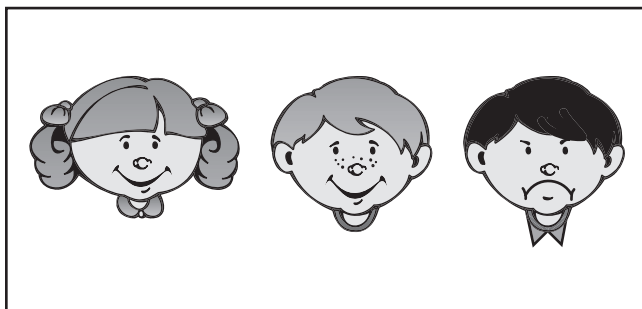
a. Write a fraction that shows the part of the group that is smiling.

$$\frac{2}{3}$$

a) The student's response is correct.

b. How did you get the top number in your fraction?

I looked and saw who was smiling.

b) Sufficient explanation is given for both numerator and denominator.

c. How did you get the bottom number in your fraction?

I counted the children.

14 Look at the group of children.
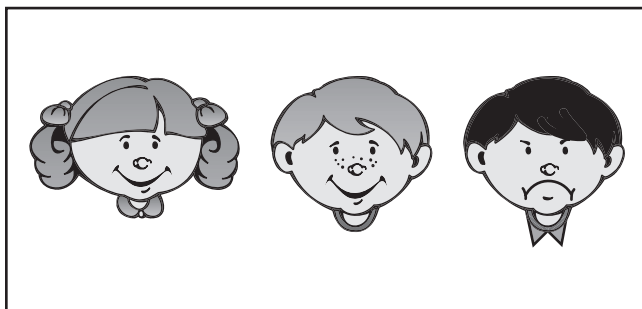
a. Write a fraction that shows the part of the group that is smiling.

$$\frac{3}{2}$$

a) The student's response is incorrect.

b. How did you get the top number in your fraction?

because their are three chidren

b) The student shows understanding of part-to-whole relationship.

c. How did you get the bottom number in your fraction?

becuase only 2 of the children are Smileing

⓮ Look at the group of children.
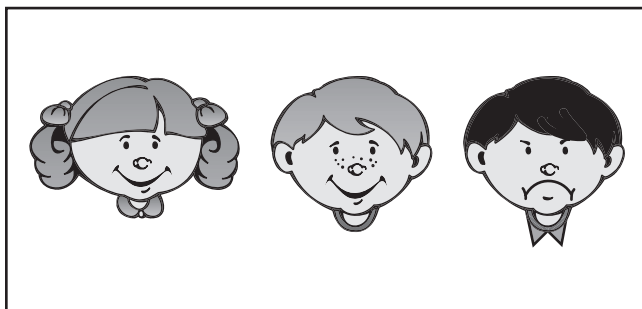
a. Write a fraction that shows the part of the group that is smiling.

2

a) The student's response is incorrect.

b. How did you get the top number in your fraction?

two children
are smiling.

b) The student does not show understanding of part-to-whole relationship.

c. How did you get the bottom number in your fraction?

One kide is
not Smiling,

N&O 2.5 **Demonstrates understanding of monetary value** <u>by adding coins together to a value no greater than $1.99 and representing the result in dollar notation;</u> <u>making change from $1.00 or less,</u> or <u>recognizing equivalent coin representations of the same value (values up to $1.99)</u>.

⓯ Lamar had $1.00 for a snack. He spent $0.65 on an apple.

    a. How much money does Lamar have now? Use a dollar sign ($) and a decimal point (.) to write your answer.

    b. Show or name a set of coins Lamar could have now.

Scoring Guide

Score	Description
2	for correct answer in part a, **$0.35**, and a correct combination of coins in part b
1	for correct answer in part a OR for a correct combination of coins in part b OR for a correct combination of coins in part b based on an incorrect answer in part a
0	Response is incorrect or contains some correct work that is irrelevant to the skill or concept being measured.
Blank	No response

Sample Responses:

1 quarter, 1 dime
1 quarter, 2 nickels
3 dimes, 1 nickel
3 dimes, 5 pennies
7 nickels
35 pennies

15 Lamar had $1.00 for a snack. He spent $0.65 on an apple.

a. How much money does Lamar have now? Use a dollar sign ($) and a decimal point (.) to write your answer.

$0.35

> a) The student's response is correct.

b. Show or name a set of coins Lamar could have now.

> b) The student showed a correct combination of coins.

SCORE POINT 2
(EXAMPLE B)

15 Lamar had $1.00 for a snack. He spent $0.65 on an apple.

a. How much money does Lamar have now? Use a dollar sign ($) and a decimal point (.) to write your answer.

$0.35

a) The student's response is correct.

b. Show or name a set of coins Lamar could have now.

b) The student showed a correct combination of coins.

SCORE POINT 1
(EXAMPLE A)

🚫📱

15 Lamar had $1.00 for a snack. He spent $0.65 on an apple.

a. How much money does Lamar have now? Use a dollar sign ($) and a decimal point (.) to write your answer.

$0.31

a) The student's response is incorrect.

b. Show or name a set of coins Lamar could have now.

Q N P

b) The student showed a correct combination of coins based on incorrect answer in part a.

SCORE POINT 1
(EXAMPLE B)

15 Lamar had $1.00 for a snack. He spent $0.65 on an apple.

a. How much money does Lamar have now? Use a dollar sign ($) and a decimal point (.) to write your answer.

> a) The student's answer is not written with a dollar sign and decimal point.

b. Show or name a set of coins Lamar could have now.

dime dime dime nicke = 35¢

> b) The student showed a correct combination of coins.

Score Point 0
(Example A)

15 Lamar had $1.00 for a snack. He spent $0.65 on an apple.

a. How much money does Lamar have now? Use a dollar sign ($) and a decimal point (.) to write your answer.

$0.65

> a) The student's response is incorrect.

b. Show or name a set of coins Lamar could have now.

QDN

> b) The student showed an incorrect combination of coins.

DSP 2.1	Interprets a given representation **(pictographs with one-to-one correspondence, <u>line plots</u>, tally charts, or tables) to answer questions related to the data, or to analyze the data to formulate conclusions. (IMPORTANT:** *Analyzes data consistent with concepts and skills in M(DSP)–2–2.***)**

16 Look at this line plot.
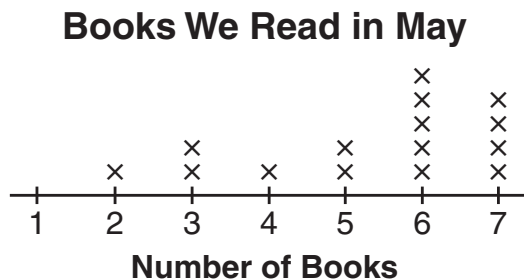
Books We Read in May

```
                        ×
                        ×
                        ×
             ×          ×      ×
             ×     ×    ×      ×
       ×     ×     ×    ×      ×
   ┼───┼───┼───┼───┼───┼───┼
   1   2   3   4   5   6   7
```
Number of Books

Key
× represents 1 student

Stella wrote this statement using the data in the line plot.

Three students read two books in May.

a. Did Stella write a correct statement? Explain why or why not.

b. Write your own statement using the data in this line plot.

Scoring Guide

Score	Description
2	for sufficient explanation in part a and a true statement in part b
1	for sufficient explanation in part a only OR for a true statement in part b only
0	Response is incorrect or contains some correct work that is irrelevant to the skill or concept being measured.
Blank	No response

Sample Responses:

Part a:
No, because the Xs show the number of students, not books.
No, because she confused books with people.
Yes, because more than 3 students read more than 2 books.

Part b:
One student read two books.
15 students read books.
All the students read more than 1 book.

16 Look at this line plot.

Books We Read in May

```
                              ×
                ×             ×        ×
        ×       ×      ×      ×        ×
    ×   ×       ×      ×      ×        ×
  +---+---+---+---+---+---+---+
    1   2   3   4   5   6   7
```

Number of Books
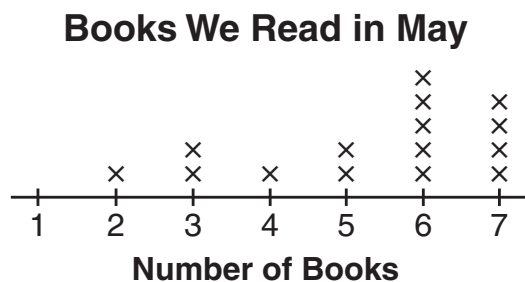
Key
× represents 1 student

a) The student's explanation is sufficient.

Stella wrote this statement using the data in the line plot.

Three students read two books in May.

a. Did Stella write a correct statement? Explain why or why not.

Stella didn't write the correct statement becaus looking at the data only one student read 2 books.

b. Write your own statement using the data in this line plot.

The mode is 6 books.

b) The student wrote a true statement based on the line plot.

⑯ Look at this line plot.

Books We Read in May

```
                          ×
                          ×      ×
             ×      ×      ×      ×
      ×      ×      ×      ×      ×
   ───┼──────┼──────┼──────┼──────┼──────┼──────┼───
      1      2      3      4      5      6      7
```

Number of Books

Key
× represents 1 student
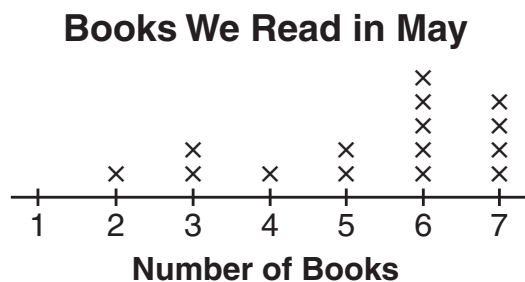
Stella wrote this statement using the data in the line plot.

Three students read two books in May.

a. Did Stella write a correct statement? Explain why or why not.

NO it not a correct statement because only 2 students read two books not three

a) The student's explanation is incorrect.

b. Write your own statement using the data in this line plot.

five students read six books in May

b) The student wrote a true statement based on the line plot.

SCORE POINT 1
(EXAMPLE B)

---

16 Look at this line plot.

Books We Read in May

Number of Books

Key
× represents 1 student

Stella wrote this statement using the data in the line plot.

Three students read two books in May.

a. Did Stella write a correct statement? Explain why or why not.

No only 1 person read two

a) The student's explanation is sufficient.

b. Write your own statement using the data in this line plot.

Three students read four books.

b) The student did not write a true statement based on the line plot.

---

16 Look at this line plot.

Books We Read in May

```
                              ×
                              ×
                              ×      ×
              ×       ×       ×      ×
      ×       ×   ×   ×       ×      ×
  +---+---+---+---+---+---+---+
  1   2   3   4   5   6   7
```

Number of Books

Key
× represents 1 student
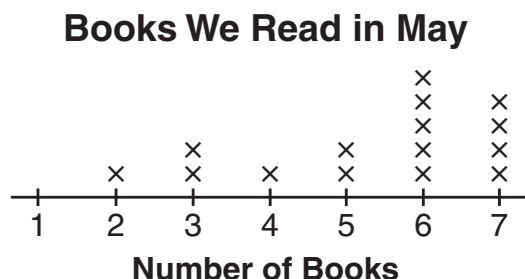
Stella wrote this statement using the data in the line plot.

Three students read two books in May.

a. Did Stella write a correct statement? Explain why or why not.

yes she did. Because the
X's ment Books and Numbers
ment children

a) The student's explanation is incorrect.

b. Write your own statement using the data in this line plot.

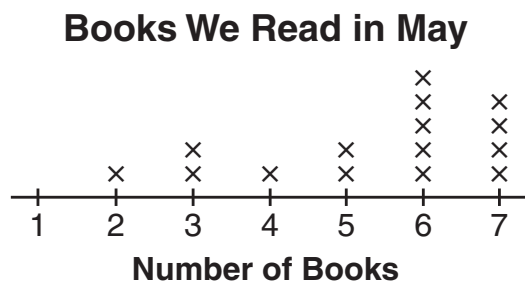5 students read 2 Books in May.

b) The student did not write a true statement based on the line plot.

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Grade 3 Mathematics Released Item Information

Released Item Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
No Tools Allowed		✓		✓							✓				✓	
Content Strand[1]	NO	NO	NO	NO	NO	GM	GM	GM	FA	DP	NO	FA	FA	NO	NO	DP
GLE Code	2-1	2-1	2-2	2-3	2-5	2-1	2-7	2-7	2-4	2-1	2-3	2-1	2-4	2-1	2-5	2-1
Depth of Knowledge Code	1	2	2	1	2	2	1	1	2	2	2	2	1	3	2	3
Item Type[2]	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC	SA	SA	SA	SA	SA	SA
Answer Key	B	C	C	A	A	B	A	C	C	D						
Total Possible Points	1	1	1	1	1	1	1	1	1	1	1	1	1	2	2	2

[1]Content Strand: NO = Numbers & Operations, GM = Geometry & Measurement, FA = Functions & Algebra, DP = Data, Statistics, & Probability

[2]Item Type: MC = Multiple Choice, SA = Short Answer